Combined application of hot water treatment and methyl salicylate mitigates chilling injury in sweet pepper (*Capsicum annuum* L.) fruits

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Abstract

Chilling injury (CI) is the major limitation in shelf life extension and quality conservation of sweet pepper fruits subjected to below optimum storage temperature (<10 °C). In the current work, the effect of hot water (HW) treatment (45 °C for 15 min), methyl salicylate (MS, 0.05 mmol L^{-1}), and the combined treatment (HW + MS) of HW and MS was investigated. Results exhibited that HW + MS treated fruits exhibited reduced chilling injury, mass loss, hydrogen peroxide, superoxide anion, and malondialdehyde content, in contrast with control. Likewise, ascorbic acid concentration, total phenolics content, and radical scavenging capacity were observed to be markedly higher in HW + MS treated sweet pepper fruits, as compared to control. In addition to this, HW + MS treatment showed markedly higher activity of peroxidase, superoxide dismutase, catalase, and ascorbate peroxidase, in contrast with control. In conclusion, our study suggested that pre-storage treatment with HW + MS could be considered as a potential approach for reducing chilling injury and maintaining a better quality of sweet pepper fruits during shelf life following cold storage.